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ABSTRACT

Early programs for computer-assisted language learning were limited in size and power by the capabilities of the first generation of microcomputers. As these capabilities have increased, it has become possible for language teachers to take advantage of tools originally intended for use in the business world, such as word processors, spreadsheets, databases, text analyzers, and telecommunications. The advantages of these packages over small, discrete drill and practice or game programs include unlimited flexibility of content, greater student involvement with the content material, and higher degree of relevance to students' life goals. With the application of several principles of good language teaching, as revealed in research, productivity tools such as these can be used in class activities at all grade levels and for all degrees of language skill. (Author/MSE)

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THE COMPUTER AND LANGUAGE LEARNING:

PRODUCTIVITY TOOLS IN THE CLASSROOM

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Abstract: Early programs for Computer Assisted Language Learning were limited in size and power by the capabilities of the first generation of microcomputers. As those capabilities have increased, it has become possible for language teachers to take advantage of tools originally intended for use in the business world, such as word processors, spreadsheets, data bases, text analyzers, and telecommunications. The advantages of these packages over small, discrete drill and practice or games programs include unlimited flexibility of content, greater involvement of the student population with the content material, and higher degree of relevance to students' life goals.

This paper reviews several principles of good language teaching as they apply to computer assisted instruction, and outlines several classroom activities using productivity tools. These activities include suggestions appropriate for all grade levels and degrees of language skills.

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BACKGROUND OF COMPUTER ASSISTED LANGUAGE LEARNING

Computer use in the teaching of language skills, especially in the area of teaching English as a second language to speakers of other languages, is entering its "third generation." While the software available in this area is not as refined or extensive as that available for math and science, remarkable progress has been made in the past 15-20 years. Some of the advances have been made possible by the advances in hardware technology, while others have emerged from current language learning theory and classroom experience with CALL.

Drill and Practice

The first generation of software for language learning developed out of "programmed learning" techniques, as did the first software in most educational fields. These drill and practice programs proliferated largely because they were easy and quick to produce. Most publishers of computer software had on their staffs programmers and designers with minimal educational background who, essentially, translated flash cards and fill-in-

the-blank exercises onto the computer, turning the computer into a very expensive "page turner". However, these programs were not a complete disaster. They provided extra practice for students who needed it but didn't get it in the classroom. They gave instant feedback that allowed the students to check their hypotheses about the language and make adjustments to the model of the language they were building in their heads, then to further test out that model on subsequent problems. They gave non-judgmental feedback to students self-conscious about trying out their developing language skills on real people, who might laugh at them. And, most importantly, students loved these programs - especially students from traditional educational systems, since they were more used to and comfortable with rote learning. The extra bells and whistles of technology added appeal to a familiar structure.

But most teachers hated drill and practice programs. Practitioners of language teaching had long since abandoned the audio-lingual approach, which stressed modeling and repeating rather than meaningful communication. The computer software available throughout most of the '70's seemed to demand a return to techniques that violated the instructors' philosophy of language education, and failed to incorporate principles

confirmed by research in language learning.

The result was that many English as a Second Language programs put off investing in computers, many teachers avoided using them (and often developed elaborate defense systems against the use of technology in any form), and many publishers stopped developing software because it seemed the market wasn't there. Things came very much to a stand-still in the U.S.

The Games Model

Fortunately, in Great Britain, the system continued to encourage research and innovation. The educational system is much more centralized there, and better co-ordination of efforts is possible. The primary impetus in developing software for language learning came from the British Council, an arm of the government that serves to promote the use of the English language throughout the world. In addition to large staffs and well-equipped facilities in many countries on all continents, the British Council supports materials development at its central offices in London and at major universities in the U.K. This is where the second generation of computer use for language learning evolved.

One of the people primarily responsible for the new direction was John Higgins (1984)of the University of Lancaster. He began producing small scale programs based on a games model, hoping to capitalize on the popularity of video arcade games, as did many developers of software for math and science in the States. In one of these games, his students put together phrases generated randomly by the computer to form new "proverbs," then share their work with classmates. In another, students guess letters and words to fill in a cloze passage, learning to make predictions about the structure of the language as they go. His work was picked up by a group of software developers for the British Council, headed by Martin Phillips (1986), who came up with, among others, Adventures in London- in which students must travel around a simulation of the subway system in London, visiting various places in order to complete a shopping list of items to purchase. At each place, they must choose the correct questions to ask - correct in grammar and in level of politeness and formality- to get what they want. The game is visually attractive, maintains interest, and begins to get at the issues of communicative competence beyond mere grammar. It also provides the student with survival skills for living in London, an intended and not unimportant side effect.

Language instructors were, for the most part, happier with the games. They looked more modern, allowed more flexibility in the use of language, and many could be played in groups, giving the students motivation to communicate with each other in a realistic way to accomplish a joint goal. But there were problems with the games model, too. For one thing, most games were small scale and only provided practice with limited structures or aspects of the language. Furthermore, students quickly got tired of playing the same games over and over again. The solution was to have many different games available, but there weren't that many on the market, and even if there had been, most ESL programs have very limited budgets, especially for "frills" like computer games.

Productivity Tools

As the available memory and power of small, inexpensive computers grew, some members of the language teaching community began to see the possibilities in using productivity tools such as word processors, spreadsheets, and databases. The advantages were obvious: these programs had unlimited flexibility since the content material could be changed endlessly; the purchase of one

program would provide many hours of usage; and the students would be learning real, marketable skills along with the language - especially useful for immigrant groups. The very nature of these programs as real world tools permits the kind of "authentic labour" that Stephen Kemmis and colleagues (1977) described as the top level node, Emancipatory, in a 4 level paradigm of CALL. Most importantly, these tools helped the computer to fill its most effective role in the classroom - that of a tool and a resource for the student and the instructor - not a mechanical tutor, or a supposedly omnipotent, all- powerful giver of knowledge, reward, and punishment.

An additional benefit of productivity tools is that they lend themselves well to cooperative group work. An overwhelming body of research supports cooperative learning as more effective in increasing achievement and promoting good interpersonal relationships than competitive or individualistic learning. A study by R. Johnson, D. Johnson, and Stanne (1986) compared the interaction and achievement of students in cooperative, competitive and individualistic groups. Seventy-five 8th graders were assigned to three conditions in groups of four to work on a computer simulation teaching map reading and navigational skills. In the first condition, students were told that they would be completing individual worksheets every day, but their grade would

be determined by the average scores of the team members on the worksheets and the final exam. In the competitive condition, students worked in groups and completed daily worksheets, but were told that their grade would be determined by their rank within the group. In the individualistic condition, students were told that their scores would be compared to preset standards to determine the grade. Students in the cooperative condition scored higher on the computer simulation and on the tests of concepts learned than students in either of the other conditions. In addition, students in the cooperative condition engaged in significantly more task-oriented verbal interaction and indicated greater acceptance of females as work partners. This indicates that interdependent reward structures may be essential for encouraging optimal learning and establishing desired attitudes. Productivity tools allow for this kind of interdependence of goal and reward structures as easily as simulations do, with the above-mentioned advantage of flexibility in content matter and level of complexity.

Word processing has been, for obvious reasons, the most widely used and heavily researched of the productivity tools. The benefits of being able to revise quickly and easily, to reorganize material, and to produce neat, readily readable and

correctable documents make word processors ideal for language teaching. In addition, students of English as a second language benefit perhaps more than anyone else from spelling check programs that help them to learn spelling in a meaningful context, and from text analyzers that can point out problems in their prose such as heavy usage of vague, general terms in place of specific, concrete vocabulary. Many who come from cultures where another alphabet is used are relieved no longer to have to struggle painfully with producing unfamiliar letters.

Considerable research has supported the value of word processing in the teaching of writing. Studies have shown that the use of word processors reduces writing anxiety (Rodrigues, 1985 and Kurth, 1987), reduces mechanical errors (Daiute, 1986), increases spelling accuracy, encourages better word usage, increases the number of supporting details, and results in longer compositions (MacGregor, 1986).

Word processors are being used in more ways than simple composition production, however. Text on a monitor screen can be seen easily by more than one person, and many teachers are capitalizing on that to facilitate group revision and peer evaluation. Others are using networks and bulletin boards to engage students in real communication with others, both inside and out of their home institution. Furthermore, word processors

are even easier than authoring systems for teachers to use in creating activities.

Spreadsheets and data bases, on the other hand, are only beginning to come into extensive use, partly because they are less obviously useful for language activities than word processors, and partly because teachers tend to be less familiar with them. The major benefit of these tools - that it is not necessary to have a computer for every one or two students to use them - is often overlooked. Students can be actively involved in gathering information to put into the computer, thus practicing their reading, researching, and speaking skills, or they can draw from the data stored by the program to perform a wide range of language activities. These applications programs, then, are particularly useful in a classroom rather than a lab setting, where students can move from task to task, drawing on all the resources available to them, including the computer.

LANGUAGE LEARNING/TEACHING AND COMPUTERS

Much of the impetus for the use of productivity tools for language teaching has come from the current wisdom and beliefs about the principles of good language teaching. For computer

technology to have a real impact on the language classroom, it is vital that its use conform to the philosophy on which the total language program is based. Some of the recent research findings and theories that have implications for computer assisted language learning are as follows:

1. Memory studies show that students retain longer that which is meaningful to them.(Stevick, 1976) Language learning activities, then, should be based on content relevant to the students' lives, rather than on material made up by a textbook author or software designer. This can be accomplished in computer activities by allowing students to choose the subject matter of the lesson, or by having them write their own material. Obviously, this is facilitated by the use of word processors, data bases and spreadsheets, which are content neutral.

2. Communicative competence is only achieved by practice in the real world forms of communication such as negotiating, compromising, requesting, refuting, sharing experiences, etc. Since it is not yet possible to have this kind of communication directly with a

computer, students should be assigned to work in small groups to accomplish a task. In the process of coming to an agreement about how to go about the task, they will necessarily get the right kind of practice. Productivity tools provide the ideal environment for this kind of task based activity.

3. Constant correction of grammar and pronunciation may help students set up an internal monitor for self-correction, but it also slows down acquisition of fluency as students pause to audit each unit of output. (Krashen, 1982) Drill and practice programs, therefore, should be used in combination with problem-solving activities that encourage fluency.

4. Good writing is achieved by writing, revising, re-writing and more re-writing - not by looking at models or hearing lectures about writing. The process approach to writing instruction - now widely used- focuses on the stages of producing a finished product, not just the product itself. This requires the teacher to look at drafts and parts of compositions, giving feedback which students use in revising their work.

Word processing capabilities encourage students to revise and re-write by making it so easy. Also, a writing lab allows the instructor to work one-on-one with students, looking at their writing while it is still on the screen - still "fluid". Corrections made at this point are usually seen as suggestions, where comments on what the student considers a finished product are perceived as criticisms.

EXAMPLES OF USES OF PRODUCTIVITY TOOLS (from Thrush, 1987)

Word Processors

1. To introduce students to the word processor, the instructor may enter some passages of text containing the kinds of errors the students often make. Editing commands are then used to correct the errors. It is easier for students to learn how to edit before they start worrying about creating and saving files; and when they start producing original work, they can concentrate on composing rather than on learning new

commands.

2. The instructor can create a cloze exercise by entering a passage appropriate to the age, abilities and interests of the students, but leaving blank spaces where several of the nouns, verbs, and adjectives go. The students, working in small groups, fill in the blanks with the words of their choice. Then they can print out the final version and share it with the class. The class might vote on the best story, silliest, etc. This exercise provides practice in moving around the text, inserting, deleting, and printing out files. It also gives the students a good idea of how easy it is to edit on the word processor, and gives them an opportunity to share their work, to feel proud of it, and to improve reading and listening skills as well as their writing skills.

3. A poem with a simple rhyme scheme ("Mary Had a Little Lamb" for younger students, for example; limericks for older students) can be entered with the lines scrambled. Students attempt to put the lines in order. This provides practice in moving text, as well as in

rhetorical analysis and phonetics ("go" rhymes with "snow" because "o" and "ow" spell the same sound). More advanced students might be asked to fill in the last line of the limerick, again sharing the results with the class.

4. A word processor serves as a very good message service. Students can leave messages for each other by saving files under the receiver's name. Each student can check the directory of files every day to see if a message has been left. Or two students who want to correspond with each other can create a file under their initials, then leave each other messages in the file. This can result in some real communicative practice, especially if it is used with a mixture of international students and native speakers. If the computer is networked or connected to a modem, the range of communication can be greatly broadened.

5. Advanced students can use the "search" function to look at examples of the use of specific structures. For example, they can find every use of "because" in a

passage, then analyze the relationships between the ideas in the sentences. It is important that the material they are examining is genuine, native speaker prose - passages from newspapers, magazines, or old administrative files containing business letters and reports are all good. Some very interesting discoveries can be made this way - when one group of students checked a file of business letters to find the most common usage of "if" conditional, they found the use of the verbless "if possible," "if necessary," which was even included in their formal curriculum.

6. In a laboratory situation, it is often difficult for students to concentrate and compose original works. Unless invention software is available to stimulate the creative process, the lab is more suitable for revision and collaboration. Students might work together to make second draft revisions as prompted by teacher comments on the first draft. Or they might look at each others' files and make comments and suggestions directly onto the file.

7. Spelling checkers and text analyzers can be effective tools for language learners. Students should keep lists of the words marked by the spelling checker and look for patterns in the mistakes make. Do they have trouble with "ie" and "ei" words? Do they need to review the rule on dropping the final "e"? Some spelling checkers will allow them to search for patterns - they might print out a list of all words ending in "ough", for example, and explore the various pronunciations of this combination with their teacher. Text analyzers usually build a dictionary from a document, telling how often each word is used. Students can see from this if they are overusing certain terms - using "and" over and over again, for example, instead of finding connecting words that express more exact relationships.

Data Bases

1. Beginning level students can gather information about the students in the class - height, weight, age, number of brothers and sisters, etc. Then they can brainstorm questions such as "Who's the tallest?", ask the program to sort by age and find the answer.

2. Intermediate students can enter information about their own countries, or about countries they have researched in groups. Questions asked of the database can involve comparison and cause and effect relationships.

3. Advanced students can find comparative data on such issues as pollution, poverty, salary levels in different countries, or some other area of interest of the class. By asking questions of the data base, they can build a file of supporting details for a comparison- contrast composition or debate.

4. Family Feud - students complete worksheets on preferences in food, T.V. shows, music, sports, etc., then enter data into a data base individually. One person acts as moderator and asks questions, queries the data base. The team of students that correctly predicts the 5 most named items in a category gets 10 points. The team with the most points at the end wins.

5. Nutrition - students research foods in the basic food groups and enter information into the data base on the

protein, carbohydrate, and calorie content. They can then check their daily meals for nutritional totals. Or they can design ideal meals, daily food plans to provide the Recommended Daily Allowance of key nutrients.

6. Children can research a topic such as dinosaurs and enter the data. Then they can ask the data base questions such as "What dinosaur lived in the Triassic period, was lizard-hipped, and had a small head?" They can begin to form ideas about how scientists classify living things, about what characteristics distinguish one category from another.

7. Data bases on specific subjects such as history, geography, etc. are becoming available. While use of these "pre-packaged" materials will not give the students as much practice with research and reading skills, they are an excellent source of content for assignments.

Spreadsheets

Spreadsheets normally handle numerical data, but they can be used in place of a data base because they will sort alphabetically as well as numerically. See the above suggestions. Also:

1. Beginning students can keep track of the daily high and low temperatures for a month. At the end of the month, the spreadsheet can figure the average temperature for the month, the peaks, and the lows. Other information they might use : daily school attendance, rainfall, number of hours they watch T.V., etc.

2. Intermediate and advanced students can research information on a topic of interest, enter it into a spreadsheet, then have the spreadsheets produce various kinds of graphs - line, bar or pie. This might accompany a written passage explaining and interpreting the graph, excellent practice for the TOEFL writing test, which now requires a written sample of this type.

Telecommunications

1. Many colleges and universities have computer terminals connected to a mainframe computer. These mainframe

systems usually provide some form of electronic mail. Students can use this to communicate with each other, with the teacher, and with other students on the campus. With a little cooperation from the computer services department, a "bulletin board" can be set up on which students can carry on lengthy discussions. Many students who are uncomfortable speaking up in class find the anonymity and the mode of communication on a bulletin board very liberating. Since students are responding to each other's comments, this gives them a marvelous opportunity to engage in real, meaningful interaction without the inhibition of the classroom setting or the judgmental eye and ear of the teacher.

2. Some elementary and high schools have access to on-line services such as Compu-serve or the Source, which can be valuable sources of research for written papers or oral presentations.

This is not intended to be an all-inclusive list of activities possible with productivity tools, any more than it is possible to list all the ways to use a blackboard, overhead projector, or any other teaching aid. Creative teachers will

always be able to find new ways of using these devices to work with their specific curricula, student populations, and teaching styles. The point to be made here is that computers are a tool, just like any other. Too much use of the computer in the classroom has been dictated, to this point, by the programmer, or the software producer, rather than by the individual instructor. We all feel competent to write our own classroom materials with paper and typewriter when we are dissatisfied with the available textbooks; few of us feel competent to write computer programs. But productivity tools offer us a pre-programmed environment in which we can create our own materials, as easily as on a typewriter.

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